

PATENT
ATTORNEY DOCKET NO. 03848-00132

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)
Marc Glazer, Jacqueline Fidanza,) Parent Examiner: Hai Vo
Glenn McGall, Curtis Frank, and)
Richard Vinci)
Serial No.: TBA (Divisional of USSN 09/545,207)) Parent Art Unit: 1771
Filed: Herewith)
Title: Porous Silica Substrates for Polymer)
Synthesis and Assays)

Mail Stop Patent Application
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Sir:

Pursuant to 37 C.F.R. §§ 1.97-1.99, Applicants hereby submit the enclosed PTO Forms 1449.

This Information Disclosure Statement is in compliance with the continuing duty of candor as set forth in 37 C.F.R. § 1.56 and is being filed with the above-identified application.

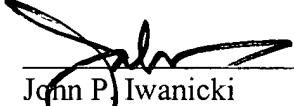
Under 35 USC §120, this application relies on the earlier filing date of application serial number 09/545,207, filed on April 7, 2000 and provisional application serial number 60/128,402, filed April 8, 1999. Hard copies of the references identified on the PTO Form 1449 were submitted to and/or cited by the Office in the prior patent application(s) and, therefore, are not provided in this application.

In the judgment of the undersigned, portions of the listed references may be material to the Examiner's consideration of the presently pending claims. However, the references have not been reviewed in sufficient detail to make any other representation and, in particular, no representation is intended as to the relative importance of any portion of the references. This statement is not a representation that the listed references have effective dates early enough to be "prior art" within the meaning of 35 U.S.C. § 102 or § 103.

Please apply any charges or credits to Deposit Account No. 19-0733.

Respectfully submitted,

Dated: November 4, 2003


John P. Iwanicki
Reg. No.: 34,628
BANNER & WITCOFF, LTD.
28 State Street, 28th Floor
Boston, MA 02109-1775
(617) 720-9600

INFORMATION DISCLOSURE CITATION
Sheet 1 of 5

Applicants: Marc I. Glazer, et al.

Filing Date: Herewith

Group: TBA

U.S. PATENT DOCUMENTS

| Examiner Initial | | Patent No. | Date | Name | Class | Subclass | Filing Date (if appropriate) |
|------------------|----|------------|----------|----------------|-------|----------|------------------------------|
| | AA | 3,640,093 | 02/08/72 | Levene et al. | 65 | 134 | 07/22/69 |
| | AB | 4,220,461 | 09/02/80 | Samanta | 65 | 22 | 04/06/78 |
| | AC | 4,426,216 | 01/17/84 | Satoh et al. | 65 | 18.1 | 01/17/84 |
| | AD | 4,528,010 | 07/09/85 | Edahiro et al. | 65 | 18.1 | 07/09/85 |
| | AE | 4,765,818 | 08/23/88 | Che et al. | 65 | 18.1 | 08/23/88 |
| | AF | 5,009,688 | 04/23/91 | Nakanishi | 65 | 18.3 | 04/23/91 |
| | AG | 5,143,854 | 09/01/92 | Pirrung et al. | 436 | 518 | 03/07/90 |
| | AH | 5,252,743 | 10/12/93 | Barrett et al. | 548 | 303.7 | 11/13/90 |
| | AI | 5,288,514 | 02/22/94 | Ellman | 427 | 2 | 09/14/92 |
| | AJ | 5,384,261 | 01/24/95 | Winkler et al. | 436 | 518 | 11/22/91 |

FOREIGN PATENT DOCUMENTS

| Examiner Initial | | Document No. | Date | Country | Class | Subclass | Translation | |
|------------------|----|----------------|----------|---------|-------|----------|-------------|----|
| | | | | | | | YES | NO |
| | AK | EP 0 348 041 A | 12/27/89 | EPO | | | | |
| | AL | EP 0 368 279 | 05/16/90 | EP | | | | |
| | AM | JP 8151232 A | 06/11/96 | Japan | | | | |
| | AN | WO 89/10977 | 11/16/89 | PCT | | | | |
| | AO | WO 89/11548 | 11/30/89 | WO | | | | |

OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, etc.)

| | |
|----|---|
| AP | Antonietti, et al., "Synthesis of Mesoporous Silica with Large Pores and Bimodal Pore Size Distribution by Templating of Polymer Latices", (1998) <i>Advanced Materials</i> 10:2, pp. 154-159 |
| AQ | Arshady et al., "Peptide Synthesis. . . .", <i>J. Chem. Soc. Perkin. Trans.</i> , 1:529-537 (1981) |
| AR | Chaiken, "Semisynthetic Peptides and Proteins," <i>CRC Crit. Rev. Biochem.</i> , 11:255-301 (1981) |
| AS | Chee et al., "Accessing Genetic Information with High-Density DNA Arrays," <i>Science</i> , 274:610-614 (1996) |

EXAMINER

DATE CONSIDERED

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant. **Copies of references not provided at the time of this submission.

| USPTO Form 1449 | | | U.S. Department of Commerce Patent and Trademark Office | | Attorney Docket No. 03848-00132 | | Serial No. TBA | |
|--|----|--|--|------------------|---------------------------------|-------------------|------------------------------|----|
| INFORMATION DISCLOSURE CITATION Sheet 2 of 5 | | | Applicants: Marc I. Glazer et al. | | | | | |
| | | | Filing Date: Herewith | | | Group: TBA | | |
| U.S. PATENT DOCUMENTS | | | | | | | | |
| Examiner Initial | | Patent No. | Date | Name | Class | Subclass | Filing Date (if appropriate) | |
| | BA | 5,405,783 | 04/11/95 | Pirrung et al. | 436 | 518 | 04/11/95 | |
| | BB | 5,409,683 | 04/25/95 | Tillotson et al. | 423 | 338 | 04/25/95 | |
| | BC | 5,412,087 | 05/02/95 | McGall et al. | 536 | 24.3 | 04/24/92 | |
| | BD | 5,424,186 | 06/13/95 | Fodor et al. | 435 | 6 | 12/06/91 | |
| | BE | 5,445,934 | 08/29/95 | Fodor et al. | 435 | 6 | 08/29/95 | |
| | BF | 5,451,683 | 09/19/95 | Barrett et al. | 548 | 302.7 | 04/23/93 | |
| | BG | 5,510,270 | 04/23/96 | Fodor et al. | 436 | 518 | 09/30/92 | |
| | BH | 5,527,681 | 06/18/96 | Holmes | 435 | 6 | 11/05/92 | |
| | BI | 5,541,061 | 07/30/96 | Fodor et al. | 435 | 6 | 04/29/92 | |
| | BJ | 5,545,531 | 08/13/96 | Rava et al. | 435 | 6 | 06/07/95 | |
| | BK | 5,547,839 | 08/20/96 | Dower et al. | 435 | 6 | 12/06/90 | |
| FOREIGN PATENT DOCUMENTS | | | | | | | | |
| Examiner Initial | | Document No. | Date | Country | Class | Subclass | Translation | |
| | | | | | | | YES | NO |
| | BL | WO 92/10092 | 06/25/92 | WO | | | | |
| | BM | WO 92/20702 | 11/26/92 | WO | | | | |
| OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, etc.) | | | | | | | | |
| | BN | Cho et al., "An Unnatural Biopolymer," <i>Science</i> , 261:1303-1305 (1993) | | | | | | |
| | BO | de Saizieu et al., "Bacterial Transcript Imaging by Hybridization of Total RNA to Oligonucleotide Arrays," <i>Nature Biotechnology</i> , 16:45-48 (1998) | | | | | | |
| | BP | Fodor et al., "Light-Directed, Spatially Addressable Parallel Chemical Synthesis," <i>Science</i> , 251:767-773 (1991) | | | | | | |
| | BQ | Forman et al., "Thermodynamics of Duplex Formation and Mismatch Discrimination on Photolithographically Synthesized Oligonucleotide Acids," <i>Am. Chem. Soc. (ACS) Symposium Series</i> 682, Chapter 13, pp. 206-228 (1998) | | | | | | |
| EXAMINER | | | | | DATE CONSIDERED | | | |
| <small>*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant. **Copies of references not provided at the time of this submission.</small> | | | | | | | | |

INFORMATION DISCLOSURE CITATION
Sheet 3 of 5

Applicants: Marc I. Glazer et al.

Filing Date: Herewith

Group: TBA

U.S. PATENT DOCUMENTS

| Examiner Initial | | Patent No. | Date | Name | Class | Subclass | Filing Date (if appropriate) |
|------------------|----|------------|----------|------------------|-------|----------|------------------------------|
| | CA | 5,571,639 | 11/05/96 | Hubbell et al. | 430 | 5 | 05/24/94 |
| | CB | 5,599,695 | 02/04/97 | Pease et al. | 435 | 91.1 | 02/27/95 |
| | CC | 5,624,711 | 04/29/97 | Sundberg et al. | 427 | 261 | 04/29/97 |
| | CD | 5,624,875 | 04/29/97 | Nakanishi et al. | 501 | 39 | 01/18/96 |
| | CE | 5,631,734 | 05/20/97 | Stern et al. | 356 | 317 | 02/10/94 |
| | CF | 5,639,603 | 06/17/97 | Dower et al. | 435 | 6 | 11/02/93 |
| | CG | 5,677,195 | 10/14/97 | Winkler et al. | 436 | 518 | 11/20/92 |
| | CH | 5,710,000 | 01/20/98 | Sapolsky et al. | 435 | 6 | 06/07/95 |

FOREIGN PATENT DOCUMENTS

| Examiner Initial | | Document No. | Date | Country | Class | Subclass | Translation | |
|------------------|----|--------------|----------|---------|-------|----------|-------------|----|
| | | | | | | | YES | NO |
| | CI | WO 95/11995 | 05/04/95 | WO | | | | |
| | CJ | WO 97/10365 | 03/20/97 | WO | | | | |

OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, etc.)

| | | |
|--|----|---|
| | CK | Glazer et al. in <i>Organic/Inorganic Hybrid Materials II</i> , Volume 576 (L.C. Klein, L.F. Francis, M.R. De Guire, J.E. Mark, editors) (proceedings of the Materials Research Society meeting, Spring 1999) pp. 371-376 |
| | CL | Holland et al., "Synthesis of Macroporous Minerals with Highly Ordered Three-Dimensional Arrays of Spheroidal Voids", <i>Science</i> , 281, pp. 538-540 (1998) |
| | CM | Kaiser et al., "Peptide and Protein Synthesis by Segment Synthesis-Condensation," <i>Science</i> , 243:187-192 (1989) |
| | CN | Kent, "Chemical Synthesis of Peptides and Proteins," <i>Ann. Rev. Biochem.</i> , 57:957-989 (1988) |
| | CO | Lockhart et al., "Expression Monitoring by Hybridization to High-Density Oligonucleotide Arrays," <i>Nature Biotechnology</i> , 14:1675-1680 (1996) |
| | CP | McGall et al., "The Efficiency of Light-Directed Synthesis of DNA Arrays on Glass Substrates", <i>J. Am. Chem. Soc.</i> 119:22, pp. 5081-5090 (1997) |

EXAMINER

DATE CONSIDERED

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant. **Copies of references not provided at the time of this submission.

| USPTO Form 1449 INFORMATION DISCLOSURE CITATION Sheet 4 of 5 | | | U.S. Department of Commerce Patent and Trademark Office | | Attorney Docket No. 03848-00132 | | Serial No. TBA | |
|--|----|---|--|-----------------|---------------------------------|----------|------------------------------|----|
| | | | Applicants: Marc I. Glazer, et al. | | | | | |
| | | | Filing Date: Herewith | | | | Group: TBA | |
| U.S. PATENT DOCUMENTS | | | | | | | | |
| Examiner Initial | | Patent No. | Date | Name | Class | Subclass | Filing Date (if appropriate) | |
| | DA | 5,744,101 | 04/28/98 | Fodor et al. | 422 | 131 | 02/14/95 | |
| | DB | 5,744,305 | 04/28/98 | Fodor et al. | 435 | 6 | 06/06/95 | |
| | DC | 5,770,358 | 06/23/98 | Dower et al. | 435 | 6 | 09/16/92 | |
| | DD | 5,795,716 | 08/18/98 | Chee et al. | 435 | 6 | 10/21/94 | |
| | DE | 5,800,992 | 09/01/98 | Fodor et al. | 435 | 6 | 06/25/96 | |
| | DF | 5,831,070 | 11/03/98 | Pease et al. | 536 | 25.3 | 04/19/96 | |
| | DG | 5,837,832 | 11/17/98 | Chee et al. | 536 | 22.1 | 05/16/95 | |
| | DH | 5,843,655 | 12/01/98 | McGall | 435 | 6 | 09/18/95 | |
| | DI | 5,858,462 | 01/12/99 | Yamazaki | 427 | 226 | 07/18/96 | |
| | DJ | 5,858,659 | 01/12/99 | Sapolsky et al. | 435 | 6 | 11/29/95 | |
| FOREIGN PATENT DOCUMENTS | | | | | | | | |
| Examiner Initial | | Document No. | Date | Country | Class | Subclass | Translation | |
| | | | | | | | YES | NO |
| | DK | WO 97/39151 A | 10/23/97 | PCT | | | | |
| OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, etc.) | | | | | | | | |
| | DL | McGall et al., "Light-Directed Synthesis of High -Density Oligonucleotide Arrays Using Semiconductor Photoresists", <i>Proc. Natl. Acad. Sci</i> 93, pp. 13555-13560 (1996) | | | | | | |
| | DM | Merrifield, "Solid Phase Synthesis," <i>Science</i> , 232:341-347 (1986) | | | | | | |
| | DN | Merrifield, "The Total Synthesis of an Enzyme with Ribonuclease A Activity," <i>J. Am. Chem. Soc.</i> , 91:501-502 (1969) | | | | | | |
| | DO | Pease et al., "Light-generated Oligonucleotide Arrays for Rapid DNA Sequence Analysis", <i>Proc. Natl. Acad. Sci</i> 91, pp. 5022-5026 (1994) | | | | | | |
| | DP | Proudnikov et al., "Immobilization of DNA in Polyacrylamide Gel for the Manufacture of DNA and DNA-Oligonucleotide Microchips, <i>Anal. Biochem.</i> 259, pp. 34-41 (1998) | | | | | | |
| | DQ | H. Scholze "New Possibilities for Variation of Glass Structure", <i>J. Non-Crystalline Solids</i> 73:669-680 (1985) | | | | | | |
| EXAMINER | | | | | DATE CONSIDERED | | | |
| <p>*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant. **Copies of references not provided at the time of this submission.</p> | | | | | | | | |

INFORMATION DISCLOSURE CITATION
Sheet 5 of 5

Applicants: Marc I. Glazer, et al.

Filing Date: Herewith

Group: TBA

U.S. PATENT DOCUMENTS

| Examiner Initial | | Patent No. | Date | Name | Class | Subclass | Filing Date (if appropriate) |
|------------------|----|------------|----------|-----------------|-------|----------|------------------------------|
| | EA | 5,861,242 | 01/19/99 | Chee et al. | 435 | 5 | 01/09/97 |
| | EB | 5,919,523 | 07/06/99 | Sundberg et al. | 427 | 333 | 10/24/97 |
| | EC | 5,981,956 | 11/09/99 | Stern | 250 | 458.1 | 05/15/97 |
| | ED | 6,025,601 | 02/15/00 | Trulson et al. | 250 | 461.2 | 06/09/97 |
| | EE | 6,040,138 | 03/21/00 | Lockhart et al. | 435 | 6 | 09/15/95 |
| | EF | 6,228,575 | 05/08/01 | Gingeras et al. | 435 | 5 | 02/07/97 |
| | EG | 6,262,216 | 07/17/01 | McGall | 528 | 10 | 10/13/98 |

FOREIGN PATENT DOCUMENTS

| Examiner Initial | | Document No. | Date | Country | Class | Subclass | Translation |
|------------------|----|---------------|----------|---------|-------|----------|-------------|
| | | | | | | | YES NO |
| | EH | WO 98/41534 A | 09/24/98 | PCT | | | |

OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, etc.)

| | | |
|--|----|---|
| | EI | Subramania et al., "Optical Photonic Crystals Fabricated From Colloidal Systems", <i>Applied Physics Letters</i> 74:26, pp. 3933-3935 (1999) |
| | EJ | Subramania et al., "Ordered Macroporous Materials by Colloidal Assembly: A Possible Route to Photonic Bandgap Materials", <i>Advanced Materials</i> , 11:15, pp. 1261-1265 (1999) |
| | EK | Velev et al., "Porous silica via colloidal crystallization" <i>Nature</i> 389, pp. 447-448 (1997) |
| | EL | Wijnhoven et al., "Preparation of Photonic Crystals Made of Air Spheres in Titania", <i>Science</i> 281, pp. 802-804 (1998) |
| | EM | "Chemistry for Automated DNA Synthesis," <i>PCR-Mate EP Model 391 DNA Synthesizer User's Manual</i> , Applied Biosystems, Section 6, pp. 1-24 (2002) |
| | EN | <i>Sol-Gel Science: The Physics and Chemistry of Sol-Gel Processing</i> (C.J. Brinker and G.W. Scherer, editors) Academic Press, 1990, pp. 787-797 |

EXAMINER

DATE CONSIDERED

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant. **Copies of references not provided at the time of this submission.